

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization International Bureau



(43) International Publication Date  
21 July 2005 (21.07.2005)

PCT

(10) International Publication Number  
**WO 2005/065936 A1**

(51) International Patent Classification<sup>7</sup>: B32B 18/00, (74) Agent: CIOFFI, James, J.; INTERNATIONAL BUSINESS MACHINES CORPORATION, Dept. 18G, Bldg. 300/482, 2070 Route 512, Hopewell Junction, NY 12533 (US).

(21) International Application Number:  
PCT/US2003/038517

(22) International Filing Date: 5 December 2003 (05.12.2003)

(25) Filing Language: English

(26) Publication Language: English

(71) Applicant (for all designated States except US): INTERNATIONAL BUSINESS MACHINES CORPORATION [US/US]; New Orchard Road, Armonk, NJ 10504 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): NATARAJAN, Govindarajan [US/US]; 32 Regency Drive, Poughkeepsie, NY 12603 (US). BEZAMA, Raschid, J. [US/US]; Four Shopis Drive, Mahopac, NY 10541 (US).

(81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

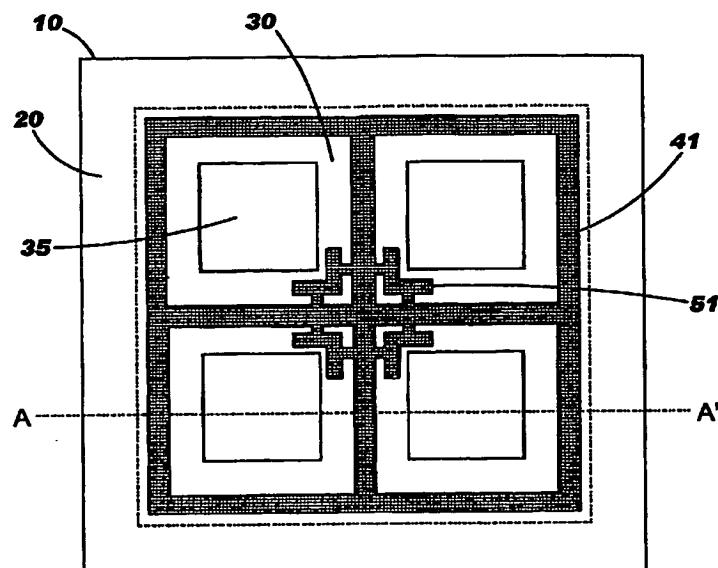
(84) Designated States (regional): ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declaration under Rule 4.17:

— of inventorship (Rule 4.17(iv)) for US only

[Continued on next page]

(54) Title: HOT PRESSING CERAMIC DISTORTION CONTROL



WO 2005/065936 A1

(57) Abstract: A method to control the post sinter distortion of hot pressing sintered multilayer ceramic laminate (100) by placing a non-densifying structure (40) in the green ceramic laminate (100) prior to sintering. One or more non-densifying structures (40) are placed on one or more ceramic greensheets (10) which are then stacked and laminated to form a green ceramic laminate (100). The laminate is then sintered and the non-densifying structure (40) will control the dimensions of the hot pressed, multilayer ceramic substrate. The method can be used to control post sinter dimensions in MLC substrates manufactured as either singular multi-up substrates by placing the non-densifying structure (40) in the kerf area (30) between the individual product ups prior to sintering.



**Published:**

— *with international search report*

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*